

# ALBERTA RESEARCH COUNCIL

2

## MEMORANDUM

TO: B. Hudson  
Department of Energy and Natural Resources

FROM: J.C. Fox  
R.J. Richardson

SUBJECT: Red Earth Area Aggregate Search

The accompanying report is the result of your request for aggregate (sand and gravel) information in the Red Earth area of Alberta.

Most of the deposits contain sand or have a high potential for sand. The best potential for gravel is firstly in area 13 and secondly in area 1.

J.C. Fox  
R.J. Richardson

JCF/RJR/sb



RED EARTH AREA  
AGGREGATE SEARCH

J.C. Fox

R.J. Richardson

Alberta Geological Survey

Alberta Research Council

November 1984

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RED EARTH AREA  
AGGREGATE SEARCH

Preamble

At the request of Alberta Forest Service (Superintendent, Slave Lake Forest) via Public Lands (B. Hudson) the Aggregate Inventory, Alberta Research Council (Fox and Richardson) conducted field work during the days of October 31st and November 1st, 1984, in the Red Earth area of Alberta.

The requested area of search included:

Tp.	R.	WSM
82	10	"
83	9,10	"
84	9,10	"
85	9	"
86	9	"
87	8	"
88	7,8	"

A review of available data -- soil maps, water well logs, Alberta Transportation information, aerial photo interpretation -- quickly indicated that the possibility of finding good aggregate deposits, other than sand, in the area was limited. Consequently a wider geographical area was searched.

The presence of 0.5 m + of snowcover, with unfrozen ground and the large geographical area indicated the use of helicopter travel.

## Results

All potential sites were overflowed, and a number of deposits were omitted from the final map as having no potential.

Seven landings for field inspection were made.

### Area 1.

Large area of glacio-fluvial, ice contact material. A public sand and gravel pit, administered by Alberta Forest Service occurs at the east end of the deposit in an area of high parallel curvilinear ridges. The pit contains sand to boulders.

Vehicle travel along the road through the north part of the area indicates much sand but no gravel was in evidence. It is likely that gravel occurrence in this area is patchy and would probably be best found by a systematic test programme using a backhoe. The first place to initiate such a programme is the ridged area in which the public pit occurs

### Area 2.

A long, linear, east-west broad ridge. Origin unknown, maybe washed moraine. Not visited, possibility of sand.

### Area 3.

An inspection of a small ridge showed clean, fine sand with no gravel. Elevation of site -- 3.0 to 4.0 m above water table. The river channel to the southwest to Highway 67 shows no sign of sand and gravel.



**Area 4.**

Not visited, pine, probably sand.

**Area 5.**

Pine, sand. At time of field work the deposit was being used by Alberta Transportation for road widening of Highway 67.

**Area 6.**

Field inspection; pine; sand, fine, clean; top 0.25 m contained gravel (clean sandy gravel); 1.5 to 2.0 m above water table.

**Area 7.**

Three deposits, pine, probably sand. These deposits occur in a wide, shallow, muskeg filled valley and are probably bars. In the northernmost deposit(?) a cutline across one of the deposits contains a small sand pit, 10 m x 20 m x 1 m to water filled base.

**Area 8.**

Esker; pit at northern end (Peerless Lake road); an inspection of the esker shows sand in the upper 1.0 m. A trail runs along the esker top in the northern part to facilitate deeper testing if required. Esker is up to 20 m high.

**Area 9.**

Pine: probably sand.

Area 10.

Pine; small ridges; inspection showed sand, coarse to fine, mainly medium; 2.0 m above water table.

Area 11.

Pine; probably sand.

Area 12.

Small terrace/point bar in valley. In light of deposit 13 it probably contains sand and gravel.

Area 13.

Large terrace, various levels, field inspection (two holes) showed clean gravelly sand. Gravel up to 4-5 cm in size. Deposit possibly 3.0 m + thick. The deposit appears to have good potential.

Area 14.

Five small terraces, probably containing sand and gravel in northernmost deposits and fining to sand in south -- see area 15. A small terrace (area 14a) has an old access road running down the valley from the north to a cabin.

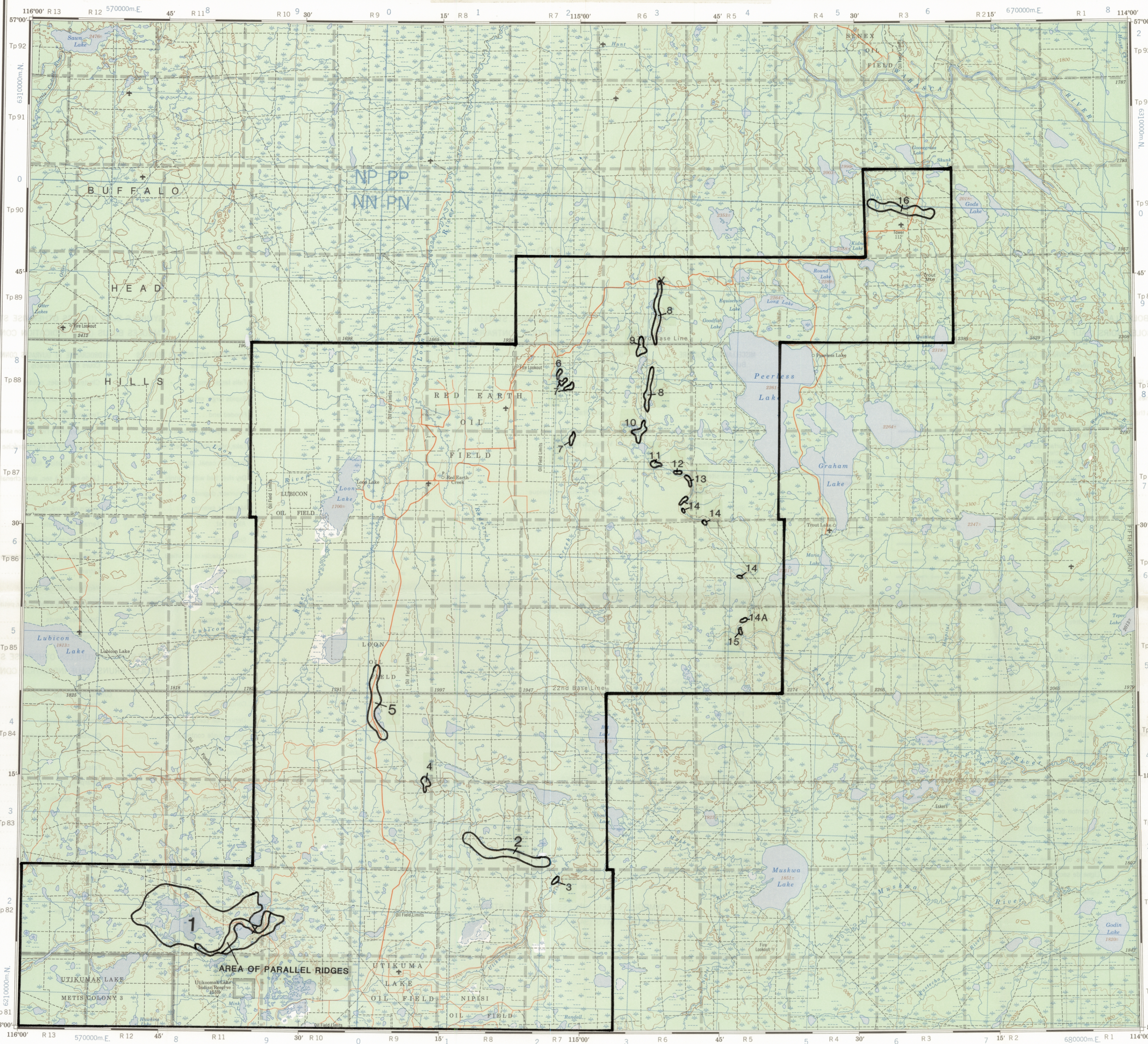
Area 15.

Small terrace; inspection showed clean coarse sand, with few gravels. 2.0 m + thickness and maybe coarser at north end of deposit. Area has been used for pasture in the past. A small cutter and pole stockade.

**Area 16.**

Series of small ridges to north of Trout Mountain tower. Small oil company pit, sand and gravel with boulders, deleterious material. Sand and gravel in pit vicinity is of very limited areal extent, giving way to till. Testing of these ridges with a backhoe may show further pockets of sand and gravel.

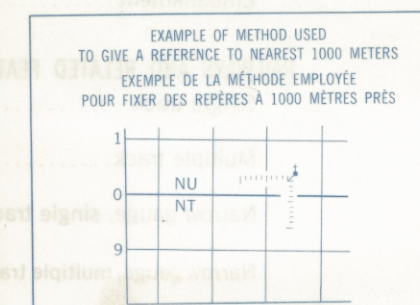
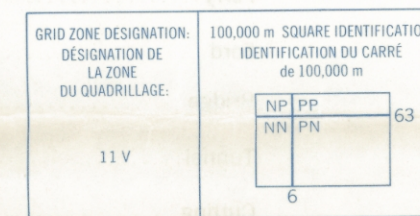




Military users, refer to this map as: **SERIES A 502 SÉRIE MAP 84 B CARTE**  
 Références de cette carte pour usage militaire: **EDITION 3 MCE ÉDITION**



**TEN THOUSAND METRE UNIVERSAL TRANSVERSE MERCATOR GRID ZONE 11**  
**QUADRILLAGE DE DIX MILLE MÈTRES TRANSVERSE UNIVERSEL DE MERCATOR**



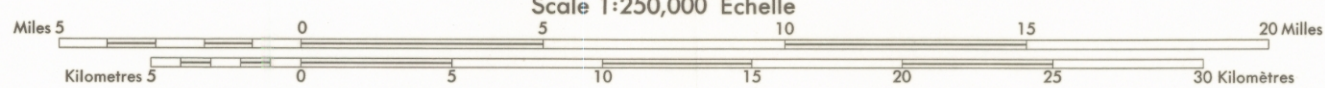
**REFERENCE POINT: POINT DE REPÈRE: CHURCH-ÉGLISE** (as above) (ci-dessus)  
**SQUARE:** Read letters of 100,000m square CARRÉ: Lire les lettres du carré de 100,000m  
**EASTING:** Read number on grid line immediately to left of point.  
**LONGITUDE EST:** Note the chiffre de la ligne du quadrillage immédiatement à gauche du repère.  
**Estimate tenths of a square from this line eastward to point.**  
 Estimer le nombre de dixièmes du carré entre cette ligne et le repère en direction est.  
**NORTHING:** Read number on grid line immediately below point.  
**LATITUDE NORD:** Note the chiffre de la ligne du quadrillage immédiatement en-dessous du repère.  
**Estimate tenths of a square from this line northward to point.**  
 Estimer le nombre de dixièmes du carré entre cette ligne et le repère en direction nord.  
**GRID REFERENCE: RÉFÉRENCE AU QUADRILLAGE: NU4504**  
 If reporting beyond 18° in any direction, prefix Grid Zone designation as: 14VNU4504  
 Si vous faites connaître votre position à quelqu'un qui se trouve à plus de 18° par rapport à la direction, indiquez également la zone du quadrillage tel que: 14VNU4504

Produced by the SURVEYS AND MAPPING BRANCH, DEPARTMENT OF ENERGY, MINES AND RESOURCES. Printed 1976.  
 Magnetic declination 1975 varies from 26°35' easterly at centre of west edge to 24°45' easterly at centre of east edge. Mean annual change 4.0' westerly.

**PEERLESS LAKE**

IMPROVEMENT DISTRICT 17  
 ALBERTA  
 WEST OF FIFTH MERIDIAN - OUEST DU CINQUIÈME MÉRIDIEN

Scale 1:250,000 Échelle



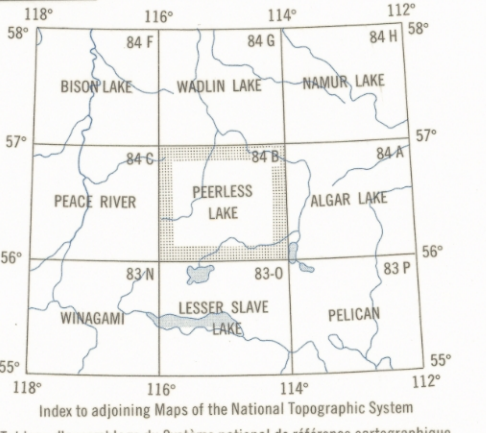
Roads:  
 loose or stabilized surface, all weather..... 2 lanes or more ..... less than 2 lanes  
 loose surface, dry weather.....  
 cart track.....  
 trail or portage.....

Routes:  
 gravel aggloméré, toute saison..... 2 voies ou plus ..... moins de 2 voies  
 de gravier période sèche.....  
 de terre.....  
 sentier ou portage.....

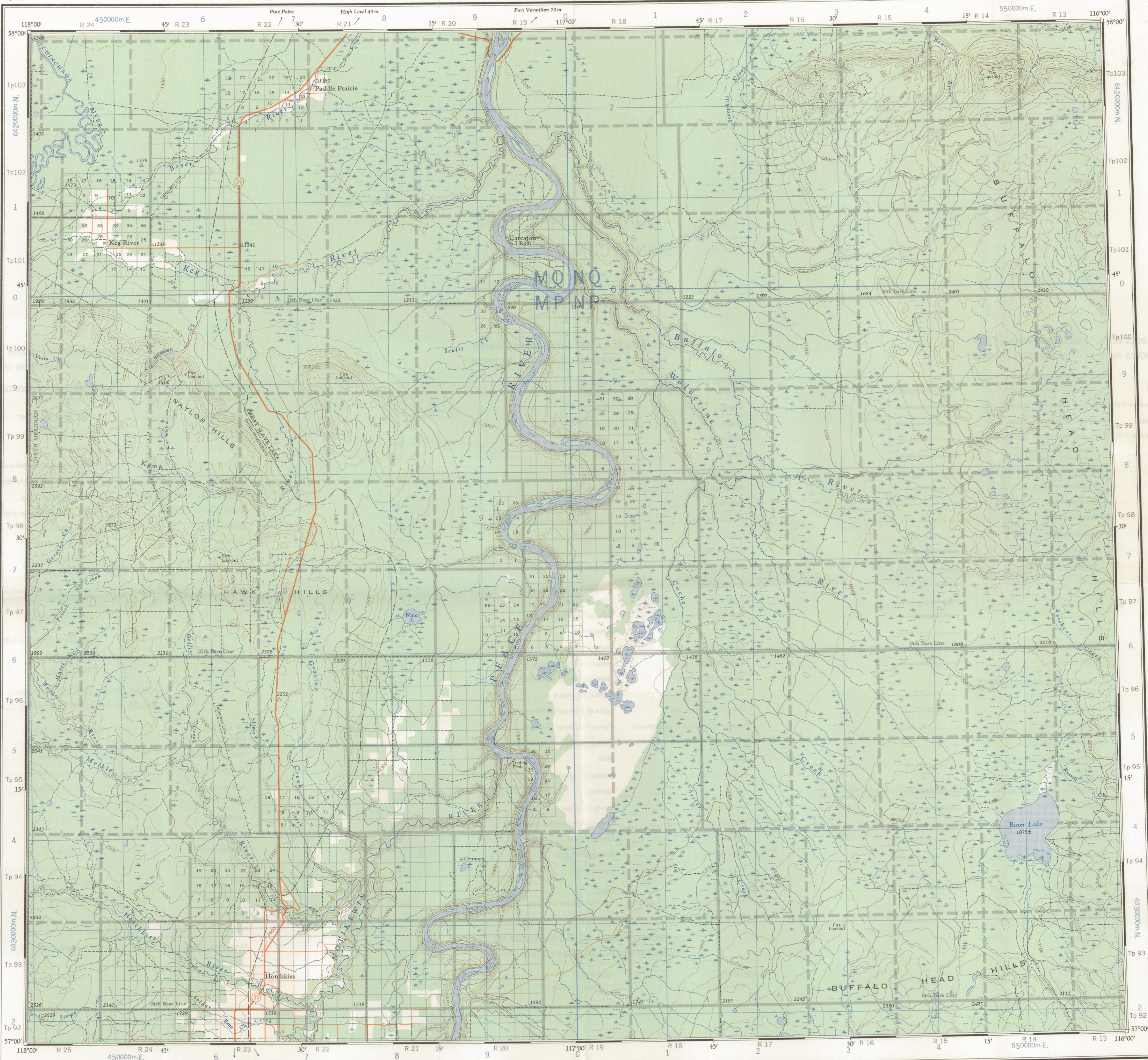
CONTOUR INTERVAL 100 FEET  
 Elevations in feet above Mean Sea Level  
 North American Datum 1927  
 Transverse Mercator Projection  
 Copies may be obtained from the Canada Map Office, Department of Energy, Mines and Resources, Ottawa, or your nearest map dealer.  
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ÉQUIDISTANCE DES COURBES 100 PIEDS  
 Élévations en pieds au-dessus du niveau moyen de la mer  
 Système de référence géodésique nord-américain, 1927  
 Projection Transverse de Mercator  
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POUR UNE LISTE COMPLÈTE DES SIGNES, VOIR AU VERSO







**GRID ZONE DESIGNATION**  
11 V

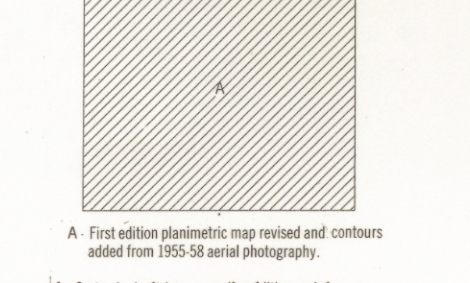
**TO GIVE A REFERENCE TO NEAREST 1000 M SQUARE: FIRE LOOKOUT TOWER**  
EXAMPLE: FIRE LOOKOUT TOWER  
SQUARE: Read letters of 100,000 m. square N immediately to left of point  
EASTING: Read number on grid line immediately to left of point  
Estimate tenths of a square from this line eastward to point.  
NORTHING: Read number on grid line immediately below point  
Estimate tenths of a square from this line northward to point.  
MILITARY GRID REFERENCE (to nearest 1,000 metres)  
If reporting beyond 18° in any direction, prefix Grid Zone Designation as: 11VM

100,000 M. SQUARE IDENTIFICATION

GRID ZONE DESIGNATION	M. SQUARE IDENTIFICATION
11 V	MONO MP NP

**TEN THOUSAND M SQUARE IDENTIFICATION**  
UNIVERSAL TRANSVERSE MERCATOR ZONE 11

RELIABILITY DIAGRAM - CROQUIS D'EXACTITUDE

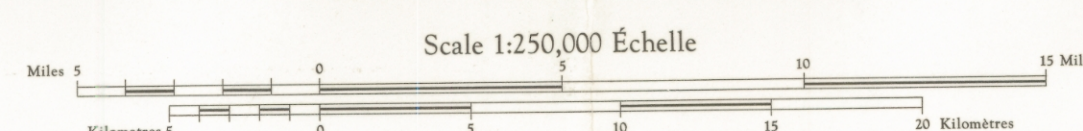


A First edition planimetric map revised and contours added from 1955-58 aerial photography.

Compiled 1964, by the SURVEYS AND MAPPING BRANCH, DEPARTMENT OF MINES AND TECHNICAL SURVEYS. Printed 1966.  
Magnetic declination 1965 varies from 28°13' easterly at centre of west edge to 27°24' easterly at centre of east edge. Mean annual change 4.9' westerly.

## BISON LAKE ALBERTA

WEST OF FIFTH MERIDIAN - OUEST DU CINQUIÈME MÉRIDIEN



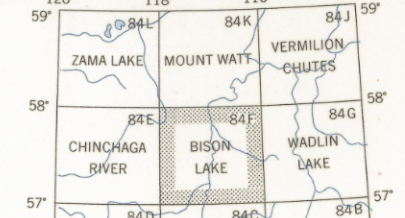
Scale 1:250,000 Échelle

Projection Transverse de Mercator  
North American Datum 1927  
Niveau de référence nord-américain 1927  
Equidistance des courbes 100 pieds  
Élévations in feet above Mean Sea Level

Copies may be obtained from the Map Distribution Office, Department of Mines and Technical Surveys, Ottawa.

Rédigée en 1964, par la DIRECTION DES LEVÉS ET DE LA CARTOGRAPHIE, MINISTÈRE DES MINES ET DES RELEVÉS TECHNIQUES. Imprimée en 1966.  
La déclinaison magnétique pour 1965 varie de 28°13' Est au centre de la limite Ouest à 27°24' Est au centre de la limite Est. Variation moyenne annuelle 4.9' Ouest.

gravier aggloméré, toute saison ..... 2 voies ou plus ..... moins de 2 voies  
de gravier, période sèche .....



Index to adjoining sheets of National Topographic System  
Tableau d'assemblage du Système National de Référence Cartographique

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